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States Government

Department of Energy

Rocky Flats Office

DUE  
DATE 11-30-93

# memorandum

Nov 24 11 09 AM '93

ACTION Hutchins

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EG&G  
ROCKY FLATS PLANT  
CORRESPONDENCE UNIT

ERD:BKT:12423

September 1993 Health and Safety Plan for Integrated Operable Units 8, 9, 10, 12, 13 and 14

Ned Hutchins, Acting Associate General Manager  
Environmental Restoration Management  
EG&G Rocky Flats, Inc.

Please find attached DOE/RFO comments on the September 1993 Health and Safety Plan for the Rocky Flats Plant Integrated Operable Units 8, 9, 10, 12, 13 and 14.

We request that EG&G review the attached comments and modify the Health and Safety Plan to insure that those activities described in the Plan are conducted safely in accordance with OSHA and DOE Orders. We also request that EG&G provide DOE/RFO with a revised Health and Safety Plan and written responses to the comments listed as "substantive comments" by November 30, 1993.

We apologize for the tardiness of the attached comments and we recognize that the additional work resulting from these requests may not have been included in the current budget. However, in the interest of conducting our work in a safe manner, we believe that the Health and Safety Plan needs to be modified to reflect the attached comments.

Questions or concerns should be directed to Bruce Thatcher of my staff at extension 3532.

James K. Hartman  
Assistant Manager for Transition  
and Environmental Restoration

Attachments

cc w/Attachments:  
S. Olinger, SHD, RFO  
W. Busby, EG&G  
B. Peterman, EG&G

cc w/o Attachments:  
R. Schassburger, ERD, RFO  
B. Birk, ERD, RFO  
S. Grace, ERD, RGO  
B. Thatcher, ERD, RFO  
L. Gunderson, ERD, RFO

Reviewed for Addressee  
Corres. Control RFP


11-23-93  
DATE BY

Ref Ltr. #

DOE ORDER # 5400.1

November 1, 1993

To: Bruce Thatcher  
Scott Grace  
Bob Birk

From: Loren Gunderson, CIH   
Aguirre Engineers, Inc.

Re: Review of Health & Safety Plan  
Integrated Operable Units 8, 9, 10, 12, 13 & 14  
Phase I RFI/RI  
September 1993  
Jacobs Engineering Group, Inc.

## SUMMARY AND RECOMMENDATIONS

I would recommend that the enclosed list of errors and omissions identified in this Health and Safety Plan be forwarded to the contractor and that I may review revisions made to the Plan. Please contact me in regard to any questions or clarifications of my comments about this Plan.

## SUBSTANTIVE COMMENTS

### #1 Section 2

This section does not address the implementation/responsibilities/authorities of this plan in regard to subcontractors at the site.

### #2 P. 2-1; Sect. 2.2.2; Sen.1 &2 and P.2; Figure 2-1 P. 4-3; Sen. 3

Although the full title is not listed in the organization chart, is the Corporate Health and Safety Officer (P. 1) Terry Briggs? Who then is the Corporate Health and Safety Manager? How do the Corporate Health and Safety Officer and the Corporate Health and Safety Manager relate to one another in terms of responsibilities and authority? There is apparently a Health and Safety Administrator (P. 4-3) but the title and responsibilities are not mentioned in Section 2.

### #3 Figure 3-3

This map is not adequate in providing the information necessary for an employee (unfamiliar with the plant site) to quickly find the onsite medical facilities. Street names and the location of the Operable Units would be an improvement. If it is practical, eliminate nonessential information to reduce the visual "clutter"

### #4 Section 4.0

There are several categories of training that are not mentioned here; Hazard Communication, daily safety briefing and forklift operation. A requirement that personnel operating motor vehicles be licensed is recommended.

#5 Section 4.2

Compliance with 29 CFR 1910.120 (f) (3) (D) requires that a medical examination be made available to an employee as soon as possible upon notification (by an employee) that symptoms of a possible overexposure to hazardous substances has occurred.

#6 P. 4-4 & 4-5; first sentence of Sections 4.1.6, 4.1.6.1, & 4.1.6.2

Replace the "...or..." with an "...and..." so the phrase reads "...all Jacobs' employees and its subcontractors...".

#7 P. 4-5; Section 4.1.7

Site Manager is responsible for verifying training/medical surveillance in this section but the responsibility was not mentioned in Section 2.1.5. Are the employees required to carry the Wallet Card and Summary Sheet? Does this record keeping include subcontractors to?

#8 P. 5-1; Section 5.2; Par. 2

This paragraph does not match the requirements of 29 CFR 1910.120.(a) (3) and (c) (7) (a) where risk identification includes OSHA PELs and "published exposure levels" defined as the NIOSH Recommended Exposure Limits (RELs) and (if RELs are not available) the ACGIH TLVs. The Plan text cites ACGIH TLVs and OSHA PELs; if these are not available, then the NIOSH RELs. Since the exposure limits may not be identical from each of these sources it is prudent to use as a compliance goal the more conservative limit from the sources advocated by the standard, or, more conservatively cite the lowest exposure of any recognized published exposure level. For example the NIOSH REL for acetone is 250 ppm whereas the TLV and PEL is 750 ppm. Also worth mentioning may be the AIHA Workplace Environmental Exposure Level Guide (WEEL) since technically it too is a peer-reviewed "published exposure level" though it is neither cited nor excluded from the HAZWOPER standard.

#9 P. 5-1; Section 5.2

It would be prudent in the Hazard Assessment Section to describe or reference the "computation formulae" of 29 CFR 1910.1000 (d) (2) for mixed air contaminants. While this standard apparently considers only the TWA exposures, it is worth some consideration that most of the IHSS have multiple contaminants, that some of the contaminants have very low ceilings and STELs, and that some of the cocontaminants at the site may have additive effects (heavy metals) or even synergistic effects (beryllium and fluorine).

#10 Table 5-1

The Chemical Exposure Hazard Summary is deficient in not identifying those compounds that may be irritating or corrosive to skin/eye contact. Although the environmental concentrations of the compounds may not be enough to promote these injuries, this information should be included because a layman may think that lacking an "X" in the "Skin Notation" column may exempt an employee from certain PPE when a contact with

the contaminant is possible. Skin Notation means only that the compound may be absorbed through the skin/eyes/mucous membranes and be a contributor to an exposure via this route.

#11 Table 5-1

This table is not complete in identifying exposure limits that are less than the full time-weighted average: i.e., "ceiling" (e.g., the  $\text{CrO}_3$   $0.1 \text{ mg/m}^3$  by the OSHA Z-2 table); or short term exposure limit (STEL) (e.g., Be at  $0.025 \text{ mg/m}^3$  for 30 min.); or respirable vs. total dust (e.g. aluminum with  $15 \text{ mg/m}^3$  total dust and  $5 \text{ mg/m}^3$  respirable fraction). Since a short term exposure is more likely under the work conditions than a full-shift exposure, these limits must be included and evaluated along with other potential exposures. Also the table should note compounds that have OSHA established "action limits" for the time weighted averages such as for arsenic at  $0.005 \text{ mg/m}^3$  per 29 CFR 1910.1018

#12 Table 5-1; Cadmium Cyanide

I was not able to find a cadmium cyanide PEL in the Z tables. I would assume that it would be the same as for dusts which would be  $0.2 \text{ mg/m}^3$ , not  $0.005 \text{ mg/m}^3$  as stated

#13 Table 5-1; Chloroform

The OSHA PEL is 2 ppm, not 350 ppm.. The ACGIH TLV is 10 ppm, not 350 ppm.

#14 Table 5-1; and Table 5-2;

Trichloroethane (CAS 71-55-6) is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

Uranium is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

Freon is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

Tritium is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

Plutonium is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

Americium is not included in the 5-1 table although it is mentioned as a site contaminant in Table 5-2.

#15 P. 5-11 Section 5.2.1; Par.2

Mention is made here that if particulates become suspended in the air that misting shall be used for dust control. This should be tied to a reading on the Miniram to ensure that misting for dust control does occur. At different OUs this may vary given the high toxicity of some compounds and the restrictive ceiling limits and STELs. The addition of a surfactant to the misting water will enhance its dust control properties and should be specified.

#16 P. 5-11; Section 5.2.2

The chemical contaminants are not the only chemicals of concern, there will be chemicals and materials that Jacobs and the subcontractors will bring onto the site as a part of their investigation that must be addressed here. These chemicals and materials include:

benzene- SOP 6.2, P.1

PCB wipe sample solvent (ethanol?)-Section 5.4.3

compressed gases SOP 6.2

acids and bases; standard preservatives for liquid samples

#17 P. 5-12; Acetone

This paragraph understates the consequences of acetone exposure. Exposures less than 1000 ppm have been found to cause eye, nose and throat irritation (Federal Register, January 19, 1989; vol.54, no. 12; pages 2446-2448); this is significantly different than the H&S Plan that cites dry mouth and throat etc. at greater than 10,000 ppm. It is disingenuous to place the least significant effects of acute exposure first when other symptoms, with which it is grouped at this exposure level, include "coma". Include the NIOSH REL of 250 ppm.

#18 Table 5-1

The TLV for Cadmium is outdated. It is currently  $0.01\text{mg}/\text{m}^3$  total dust and  $0.002\text{mg}/\text{m}^3$  respirable fraction.

#19 P. 5-12; Aluminum

Since the topic header is "Chemicals of Concern", a discussion about aluminum's medicinal applications is irrelevant and potentially misleading. Include here the OSHA PEL of  $15\text{mg}/\text{m}^3$  total and  $5\text{mg}/\text{m}^3$  respirable dust; and the ACGIH TLV of  $10\text{mg}/\text{m}^3$ .

#20 P.5-12: Aluminum Nitrate

The toxic effects of "ingestion of large amounts" are not as relevant as the unmentioned inhalation route of exposure which has been linked to pulmonary fibrosis. Delete the sentence "No exposure limits for this compound were noted." The ACGIH TLV is  $5\text{mg}/\text{m}^3$ .

#21 P.5-13; Arsenic

"Subcutaneous, intramuscular, and intraperitoneal routes" are not only unlikely exposure routes given the assigned tasks, but most readers of this document will have no idea what they mean even though virtually everyone equates arsenic with "poison." Speaking (relatively) more plainly, the likely routes of exposure will be through inhalation and just possibly ingestion. Health effects of arsenic include corrosive effects to the skin and mucous membranes, and skin sensitization. The OSHA established "action limit" for the time weighted averages for arsenic at  $0.005\text{mg}/\text{m}^3$ , a  $0.002\text{mg}/\text{m}^3$  ceiling, and a  $0.010\text{mg}/\text{m}^3$  PEL as per 29 CFR 1910.1018.

#22 p.5-13; Beryllium

Stronger language about the hazards of beryllium is suggested. From Fundamentals of Industrial Hygiene, 2nd Ed. (National Safety Council, 1981):

"Beryllium is among the most chemically toxic of all elements yet investigated. Acute effects have been brought about in animals with beryllium in quantities in the order of millimicrograms. It has been established that a worker may carry home enough beryllium compound on his clothes to result in illness to some member of his family. Several investigators have demonstrated that the presence of fluorine contributes to the toxic action of beryllium."

The authors of this H&S Plan may note that the presence of beryllium and fluoride occurs at several of the IHSS (123.1, 123.2, and 162), and while it is unclear to me whether an exposure to fluoride can act as fluorine does in promoting deleterious health effects from beryllium, it is worth further examination.

The H&S Plan must not mislead a reader into thinking there are no acute health effects. This may be surmised as it is stated that "Inhalation of beryllium dusts *may lead to the development of beryllosis....*Additional effects of inhalation include..." The possibility of pneumonitis or hypersensitivity may result from a single acute exposure but the impression left with the reader is that these "additional effects" may result from multiple exposures that develop the effect.

Beryllium is a NIOSH occupational carcinogen and has a ceiling of  $0.0005 \text{ mg/m}^3$ , an OSHA PEL of  $0.002 \text{ mg/m}^3$ , (not  $2 \text{ mg/m}^3$  as stated in the H&S Plan), an OSHA ceiling of  $0.005 \text{ mg/m}^3$ , an OSHA 30-minute STEL of  $0.025 \text{ mg/m}^3$ .

#### #23 P.5-13; Cadmium

The first sentence does not seem supported by available evidence; either that skin exposure is a contributor to overall exposure or that contact with metallic cadmium results in eye/skin/mucous membrane irritation. To say "Cadmium is a poison ..." is perhaps a too general; to a toxicologist everything is potentially a poison, it is the *dose* that makes it so. Ingestion of cadmium in chronic or acute doses does not typically produce coughing, chest tightness, and substernal pain. The kidneys are most definitely a target organ and they are not discussed. NIOSH recommends that exposure be reduced to the lowest feasible concentration. Include the OSHA PEL and ceiling limit.

#### #24 P. 5-14; Calcium Oxide

This compound is not listed in either Tables 5-1 or 5-2. It should be mentioned that this compound generates heat when it comes in contact with water. It is redundant to say that a caustic to living tissue is also an irritant; and it should be mentioned that this irritation can be to the skin, and eyes,.. The NIOSH REL is  $2 \text{ mg/m}^3$ . The OSHA PEL is  $5 \text{ mg/m}^3$ .

#### #25 P. 5-14; Carbon Disulfide

It is more relevant to mention that carbon disulfide is absorbed through the skin than the "interperitoneal route". Carbon disulfide exposure has also been related to the development of heart disease (the basis of its PEL revision). Dermatitis may result from skin contact. The NIOSH REL is 1 ppm with a skin notation and a short term exposure limit of 10 ppm. The OSHA PEL is incorrectly cited as 20 ppm; it is 4 ppm with a STEL of 12 ppm. The ACGIH TLV is 10 ppm.

#### #26 P. 5-15; Chloroform

Reference comment in Beryllium on the statement "Chloroform is a poison.." The statement that it affects "...the body as a whole." is vague. Inhalation may expose the nasopharyngeal mucous membranes to irritation but you could hold your breath until you

turned blue and chloroform would still irritate your eyes (conjunctiva). The OSHA PEL is 2 ppm; the ACGIH TLV is 10 ppm, NIOSH sets a 2 ppm limit over a 60 minutes as a short term exposure limit.

#27 P.5-15; Chromium and Chromium Compounds

Chromium is known to promote damage to the liver and kidneys. The chromate salts are ACGIH *confirmed* carcinogens. The last sentence is inaccurate; the PEL is not 1 mg/10 m<sup>3</sup> and it is not the most conservative exposure limit. The NIOSH REL is 0.001 mg/m<sup>3</sup> for chromic acid and all Cr (VI) compounds; ACGIH adopted a 0.05 mg Cr (VI)/m<sup>3</sup> for chromic acid and certain water soluble and water insoluble Cr(VI) compounds; OSHA set its PEL ceiling for CrO<sub>3</sub> at 0.1 mg/m<sup>3</sup>

#28 Section 5

Given the extent of corrections necessary for compounds listed in items #17- #27 above, I recommend a review of all the compounds to ensure the exposure limits and principal health effects are complete and accurate.

#29 P. 5-23; Par. 3

Asbestos is no longer a product constituent of cement mixes.

#30 P. 5-28; last paragraph

The first sentence of this paragraph identifies this version as a draft. When will the research on these potential contaminants be completed?

#31.....P. 5-29; Section 5.4

While I agree that generally that there is a low probability for contact with contaminants, this follows only if we make the assumption that all engineering, PPE, and procedural requirements are rigorously maintained. The assumptions used to "qualify the magnitude of chemical and radiological hazards" misses a critical consideration; many of these IHSS have multiple contaminants of materials with very low exposure thresholds for promoting serious health injury. Dilution and transport by rainwater, volatilization and adhesion to surrounding soils are inconsequential when evaluating the exposure potential for metals, and to suggest these mechanisms will ensure an "extremely low probability of contact" is misleading. Therefore a strategy of reducing exposures to as low as reasonably achievable seems preferable to offering assuasive and unsubstantiated assurances that the aforementioned mechanisms are palliative of the potential exposures and their hazards.

#32 P.5-30; Bullet 2

Either describe or append the acceptable limits for radiation (DOE 5480.11).

#33 P. 5-30; last paragraph; Sen. 1

Tank and pipeline inspections may not be low hazard tasks.

#34 P. 5.32; Center column; Cell 2  
P. 5.33 Center column; Cell 2

Include "generation of airborne dusts".

#35 P. 5-32; Column 3; Cell 3

I would either prohibit the use of power washing equipment for the decontamination or require the use of splash protection including face shield.

#36 P. 5.33 Center column; Cells 2 & 3

Include "Noise exposure" as a hazard and "Hearing defenders" as a control.

#37 P.5-33; Column 3; Cells 2 & 3

Include "Wear leather gloves".

#38 Section 5

Why is there no table of hazards and controls for surface water and sediment sampling? Aren't the personnel conducting radiation surveys, soil-gas surveys, site walkovers, and tank/pipeline inspection subject to the same hazards and in need of the same protection as personnel collecting soil samples?

#39 P.5-35; Par. 2; Sen. 1

P.5-36; Sect. 5.5.2; Sen 1

P. 5-36; Sect 5.5.3

It is unclear to me how a drill rig will be employed in this work plan.

#40 P.5-36; Par 1

SOPs for drilling not included in my copy of this Plan.

#41 P. 5-37; Sect. 5.5.4

Reference your Hearing Conservation Program required by 29 CFR 1910.95 (c).

#42 P. 5-39; Sect. 5.5.7

Ground water will not be sampled in this work plan; splash hazard most likely during decontamination activities.

#43 P. 5-43; Par. 1; item 4)

Freezing of the extremities is not necessarily a step when succumbing to hypothermia. Many hypothermia fatalities have occurred at temperatures 15-20 degrees above freezing. The unmentioned and most critical factor to hypothermia prevention is not "freezing or rapidly dropping temperatures."; it is the loss of body core heat due to wet skin or contact of the skin with wet clothing. The body can not generate the heat necessary to balance the loss of heat from the skin as heat is rapidly drawn off by the conductive properties of the water and the high energy penalty of evaporating moisture off the skin.. Therefore, a remedy of a backup set of warm dry clothing is recommended, or ensuring workers do not perform physically exerting tasks in a warm area before they exit to a cold environment in order to mitigate perspiration which promotes heat loss.



#44 P.5-44; 5.5.10; Sen. 1

The sun emits ultraviolet radiation (UV) most of which is at a wavelength of "light" not visible to the human eye, and none of which is emitted as "heat".

#45 P. 5-46; Section 5.5.12

The SOP referenced does not meet the requirements of 29 CFR 1910.146 on numerous points (e.g., identification of confined spaces, permitting of confined spaces, duties of attendant and entry supervisor, rescue and emergency services, etc.)

#46 P. 5-47; Sect 5.5.13; Sen. 1

Lockout/tagout must be explained and implemented not only in terms of "hazardous sources of energy", because this does not seem to encompass the "servicing and maintenance of machines and equipment in which the *unexpected* energization or start up...could cause injury" (29 CFR 1910.147 (a) (1). Jacobs SOP 8.9 was not included in my copy of this Plan.

#47 P 5-52; Tick Avoidance

I would recommend that when checking clothing to pay attention to the inside of the seams and cuffs. Also if clothing can be worn so socks are pulled tightly over pants cuffs, jacket hoods kept up when walking tall brush, etc., the opportunities for ticks to penetrate the clothing boundaries are reduced. Personnel should never approach or pick up a habitat mammal on the site. Bubonic plague has been reported in ground squirrels within 50 air miles of this site at several locations.

#48 P-5-56 and 5-57; Section 5.7

The stated goal of the "hazard communication procedure" does not mention specifically that it is to address *chemical* hazards and does not set requirements for labeling, maintenance of MSDSs, and procedures for handling the releases of hazardous materials. It is also recommended that the specific hazardous substances that Jacobs or its subcontractors may expect to bring onto the site be listed in this Plan and the available MSDSs appended. Contrary to a literal reading of bullet 3 on page 5-57, the Hazard Communication Standard does not encompass hazardous waste (29 CFR 1910.1200 (a) (6).

#49 P.6-1; last sentence

Instrument calibration form not included in Appendix C.

#50 P. 6.2; Sect 6.3; Par. 2; Sen. 1

Why do you specify the 11.7 (eV) lamp? Granted that the trichloroethane, carbon tetrachloride, and chloroform do not respond to the 10.2 (eV) lamp, but the problems associated with cleaning the 11.7 lamp window is that either Freon or a chlorinated solvent are required; if water comes in contact with the lamp window the instrument will be damaged. An OVA will detect the compounds listed above and is a practical direct reading instrument for field use.

#51 P. 6.2; Sect 6.3; Par. 3; Sen. 5

The term "action level" should be defined.

#52 P. 6.2 Sect 6.3; Par 3; Sen. 5

P. 6.3 ; line 2 & 3

P. 6.3; Par. 2; last sentence

These sentences should have "at least" inserted after the word "taken" since as it reads, 15 minutes must elapse between readings; direct reading instruments should be monitored continuously when such readings occur. These sections should concur with the Section 8.1.2 (P. 8-4; Bullet 1) in its requirement for continuous air monitoring when Level C is reached.

#53 P. 6.3; Par. 1; last sentence

Chromium and other metals will not be detected by photoionization and the results from personal monitoring may not arrive until weeks after the sampling has been completed. Therefore, language that prohibits the use of colorimetric tubes is not acceptable since there is no other means to tell whether an exposure has occurred.

#54 P. 6.3; Par. 2; Sen.

Why are the action levels for dust monitoring based on nuisance dust? Does this have something to do with the instrument's detection limits in not registering the respirable fraction? How is this sufficiently conservative when the PELs and RELs for many compounds are 3 orders of magnitudes less, and there is no procedural requirement that these readings be taken in the breathing zone? Is there a SOP on the use of the Miniram?

#55 P. 6.4; Par. 2 last sentence

Change "may be required" to "will be required" or an employee overexposure may result.

#56 P. 6.4; Personal Sampling

It should be clarified as to what is meant by ..."an initial round of five samples...for the contaminants of concern. Does it mean 5 samples for each contaminant of concern at each IHSS? Does it mean 5 samples over the course of the work plan ?

# 57 P. 6.5; Par. 2; Sen. 5

Append SOP 9.4 to this Plan.

#58 P. 6.10; Sect. 6.5

Coring of asphalt and concrete will generate noise.

#59 P.7-3; Sect 7.1.4

Require MSDSs be kept on site.

#60 P. 7-5; Par.2; Sen.1

The ambiguity in excusing the use of the Zone system is troublesome since apparently a few guidelines may suffice to determine conditions when their use is not needed. The Appendix A tables could even make this quite explicit. Otherwise, I see no administrative mechanism that determines who makes this decision to use or not use the zone system.

#61 P.8-1; Sect. 8.0

The introduction to PPE should make it clear that *engineering controls* and *work practices* shall be instituted to reduce and maintain employee exposure. While this Plan has mentioned misting for dust control several times, I do not think the importance can be overemphasized given the necessity for keeping exposures to hazard-bearing dusts ALARA.

#62 P.8-1; Sect. 8.0; Par. 2

Include "upgrading" PPE levels as well as downgrading. Also, is there any reason why a worker may not elect to upgrade his/her own PPE so long as the decision to downgrade always lies with the site HSO?

#63 P. 8-2; Par 2.

Paragraph 2 lists surface water/sediment sampling as an activity that should be done "on all sites" in the "base level of protection" and that includes an uncoated Tyvek. Although the next paragraph upgrades to poly or Saranex when free liquids are encountered (and when wouldn't they be during surface water sampling?) imprecise writing makes several readings necessary before reason can be made of it.

The list of PPE in paragraph 2 is different than that listed in Section 8.1.3 although both are D Modified. (difference in requirement for slung respirator, inner latex gloves). Concrete coring/sampling should be performed with leather gloves. Polyvinyl alcohol gloves are costly and their finish dissolves on contact with water; other (Silvershield, Viton) less expensive and more durable construction are available for sampling PCB contaminated soils. Why does this "base level of protection" not mention eye protection, splash protection when sampling liquids, hardtoes in boots, or disposable boot covers?

#64 P.8-2;

Is there a rationale for describing activities in Section 3.6 as all being "nonintrusive" then designating some of these activities in Section 8.1.1 as being either "invasive" or "noninvasive"?

#65 P. 8-3; Bullet 9

P. 8-5; Bullet 8

It is probably not that important to have intrinsically safe radios since mitigation of fire hazard is a low priority in this Plan as proposed.

#66 P. 8-2; Par 3

Polycoated Tyvek or Saranex are the only additional protection mentioned when action levels (PELs and TLVs) are detected. Why aren't Miniram readings considered here for upgrading when dust action levels are exceeded?

#67 P. 8-4; Sect. 8.1.3;

I disagree that outer disposable boots should be optional; given the uncertainty about contaminant levels and the extreme toxicity of these contaminants I would think them essential for any individual entering the exclusion zone

The respirator type (full face) and cartridge type should be specified.

#68 P. 8-5; Sect 8.1.4

The Tyvek worksuit should be a minimum protection for anyone in the exclusion zone based on the high toxicity of known or suspected contaminants and the possibility that a contamination event may result in personnel leaving the controlled area wearing contaminated clothing, carrying contamination off the site and possibly home to their families. Boots should have hard toes and shanks (specify ANSI). Safety glasses should be required to have side-shields and meet ANSI specifications. Define what is intended by requiring escape respirators, i.e., do you want the 5 minute cylinder with mask or hood? Include personal dosimeter badge.

#69 P. 8-5; second bullet list

The wording should be "Meeting all of these criteria...." not "Meeting any...". Otherwise there would have to be "hazardous air pollutants (sic)" and contact potential before an upgrade is allowed.

#70 P. 10-4; Sect. 10.2.3

First aid to an injured worker should not be specified as the third most important action. Evacuation may not even be necessary in all circumstances and the paragraph is unclear about whether the injured is moved as a part of the evacuation or not.

#71 Appendix A

The acronyms in the "Notes" table (e.g., GMCH,) need to be defined.

#72 Appendix B

There are two medical surveillance procedures here. Are both in effect? Do the more stringent provisions of each apply? Will the ACGIH Biological Exposure Indices be used for arsenic, cadmium, carbon disulfide and chromium?

#73 Appendix C

Please ensure that if a procedure, SOP etc. (whether Jacobs, EG & G, or DOE order) if referenced in this Plan is either in the Plan as an Appendix, or required to be on the site in some other form.

An index for this Appendix would be handy

#74 Appendix C; SOP 7.0; , first paragraph; last line

I know of no required permit issued by OSHA for excavations.

#75 Appendix C; SOP 7.0; , bullets 1 and 7

Typically the owners and the utility owners are notified and they are responsible for locating the underground utilities. The requirement that the shoring plans be designed/approved by a California engineer seems a bit restrictive. Most of the even numbered pages were missing from my copy of Appendix C making this review incomplete.

## EDITING COMMENTS

#1 P. 3-11; Par. 2; Sen. 1

I think that "Fidler" is all caps (FIDLER) and is an acronym for Field Instrument for Detection of Low Emission Radioactivity.

#2 P. 4-5; Section 4.1.6.1; Sen. 2

"with" misspelled as "witjh".

#3 P. 4-5; Section 4.1.7; Sen. 2

"RFP" misspelled as "RFB"

#4 P. 5-1; Par. 3; Sen. 1

Table 5-1; P.2

Change "Government" to "Governmental"

#5 Table 5-2; P.1

Carbon tetrachloride misspelled as "Carbontetrachloride".

#6 Table 5-2; P.2

Sodium Fluoride misspelled as "Sodium Flouride".

#7 P. 5-13; Beryllium; Line 5

P.5-15 ;Chloroform; Line 1

Change "suspect human carcinogen" to "suspected human carcinogen".

#8 P.5-47; Sect. 5.5.14; Sen. 2

Delete ",however,".

#9 P.5-51; Sect. 5.6.2.1; Sen. 1

A run-on sentence. Also sensitization is not caused by "repeated stings". One previous sting is enough.